AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1-70. (canceled)

71. (currently amended) A semiconductor device having a semiconductor multi-layer structure which includes at least an active layer ~~having at least a quantum well, and said active layer further~~ including at least [[a]] one luminescent layer of $In_xAl_yGa_{1-x-y}N$ ($0<x<1$, $0\leq y\leq 0.2$), and at least a part of said at least one luminescent layer acting as at least a quantum well,

wherein said semiconductor device satisfies at least one of:

a first condition that a threshold mode gain of each of said at least quantum well is more than 12 cm^{-1}, and

a second condition that said semiconductor device has an internal loss "α_i" (cm^{-1}) which satisfies $\alpha_i > 12 \times n - \alpha_m$ (cm^{-1}), where "α_m" is a mirror loss, and "n" is a number of said at least quantum well; and

a third condition that said semiconductor device has a slope efficiency "S" (W/A) which satisfies: $S < 3 \times \{\alpha_m / (12 \times n)\} \times [\{(1-R_1)\sqrt{(R_2)}\} / \{(1-\sqrt{(R_1R_2)}) \times (\sqrt{(R_1)}+\sqrt{(R_2)})\}]$, where

"R_1" is a first reflectance of a first cavity facet, from which a light is emitted, "R_2" is a second reflectance of a second cavity facet opposite to said first cavity facet, "α_m" is a mirror loss, and "n" is a number of said at least quantum well, and

wherein said semiconductor device further satisfies at least one of:

a fourth condition that a differential gain "dg/dn" of said at least active layer satisfies $dg/dn \geq 1.0 \times 10^{-20}$ (m^2); and

a fifth condition that standard deviations of microscopic and macroscopic fluctuations in a band gap energy of said at least luminescent layer are not more than of 40 meV.

72. (canceled)

73. (canceled)

74. (canceled)

75. (currently amended) The semiconductor device as claimed in claim [[74]] 71 , wherein said semiconductor device has a cavity length "L" of not less than 1000 micrometers, and said first reflectance "R_1" is not more than 20%, said second reflectance "R_2" is not less than 80% and less than 100%, and said slope efficiency "S" satisfies $S < 2.1/n$ (W/A).

76. (currently amended) The semiconductor device as claimed in claim 71, wherein said ~~semiconductor device~~

luminescent layer has a photo-luminescence peak wavelength distribution of not more than 40 meV.

77. (original) The semiconductor device as claimed in claim 71, wherein said semiconductor multi-layer structure comprises a gallium-nitride-based multi-layer structure.

78. (original) The semiconductor device as claimed in claim 77, wherein said gallium-nitride-based multi-layer structure extends over a gallium-nitride-based substrate.

79. (original) The semiconductor device as claimed in claim 77, wherein said gallium-nitride-based multi-layer structure extends over a sapphire substrate.

80. (original) The semiconductor device as claimed in claim 77, wherein said gallium-nitride-based multi-layer structure extends over a substrate having a surface dislocation density of less than 1×10^{8} /cm^{2}.

81-120. (canceled)

121. (new) The semiconductor device as claimed in claim 71, wherein a standard deviation "Δ_{x}" in the "microscopic fluctuation" of the indium composition is not more than 0.067.

122. (new) The semiconductor device as claimed in claim 121,

wherein said semiconductor device has a slope efficiency "S" (W/A) which satisfies:

$S < 3\times\{\alpha_m/(12\times n)\}\times[\{(1-R_1)\sqrt{(R_2)}\}/\{(1-\sqrt{(R_1R_2)})\times(\sqrt{(R_1)}+\sqrt{(R_2)})\}]$, where "$R_1$" is a first reflectance of a first cavity facet, from which a light is emitted, "R_2" is a second reflectance of a second cavity facet opposite to said first cavity facet, "α_m" is a mirror loss, and "n" is a number of said at least one quantum well.

123. (new) The semiconductor device as claimed in claim 122, wherein said semiconductor device has a cavity length "L" of not less than 1000 micrometers, and said first reflectance "R_1" is not more than 20%, said second reflectance "R_2" is not less than 80% and less than 100%, and said slope efficiency "S" satisfies $S < 2.1/n$ (W/A).

124. (new) The semiconductor device as claimed in claim 121, wherein said semiconductor device has an internal loss "α_i" (cm^{-1}) which satisfies $\alpha_i > 12\times n - \alpha_m$ (cm^{-1}), where "α_m" is a mirror loss, and "n" is a number of said at least one quantum well.

125. (new) The semiconductor device as claimed in claim 121, wherein said semiconductor device has a photo-luminescence peak wavelength distribution of not more than 40 meV in said active layer.

126. (new) The semiconductor device as claimed in claim 121, wherein said substrate is a gallium-nitride-based substrate.

127. (new) The semiconductor device as claimed in claim 121, wherein said substrate is a sapphire substrate.

128. (new) The semiconductor device as claimed in claim 121, wherein said substrate has a surface dislocation density of less than 1×10^{8} /cm^{2}.

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include changes to Figures 1-18. These sheets, which include Figures 1-18 replace the original sheets including Figures 1-18. Figures 1-18 are the same as the original drawings and are edited to improve the quality of the drawing lines and numbers. Figures 7 and 8 have also been amended, wherein the term "E_G fluctuation" has been changed to read "Standard deviation of E_G fluctuation".

Attachment: Replacement Sheets